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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/310,598	05/12/1999	K. DEREK SHAEFFER	STFD.005PA	9042

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EXAMINER

LUGO, DAVID B

ART UNIT PAPER NUMBER

2634

DATE MAILED: 07/02/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/310,598

Applicant(s)

SHAEFFER ET AL.

Examiner

David B. Lugo

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. References under the subheading "OTHER DOCUMENTS" of information disclosure statement filed 11/16/99 have not been considered, as no copies were available to the Examiner. Applicant is kindly requested to submit copies of all documents crossed off of Form PTO-1449 in response to this Office Action. All listed United States Patents have been considered, as copies were available.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 534 and 544 (page 156 line 17). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1-10 are objected to because of the following informalities:

- a. Claim 1, line 6, "*for*" should be deleted.
- b. Line 3 of both claims 9 and 10, "*analogy* circuitry" should be --*analog* circuitry--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2-5, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 2 recites the limitation “the step of effectively disabling the processing of data by the analog circuitry while processing the data with the digital signal processing circuitry” in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 6-8, 11-15, 18-20, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. U.S. Patent 5,294,928.

Regarding claims 1, 6, 7, 11, 18, 19, and 25, Cooper discloses analog circuitry (ADC 12) that captures information from analog input channels (col. 4 lines 39-41) while a microcontroller is in a reduced activity (sleep) mode, as described in col. 2 lines 33-48. Cooper further describes in col. 7 lines 7-46 that the ADC can be shut off to reduce operating current when not needed,

and that after ADC conversion, the circuit can wake up the processor, thus permitting digital signal processing of the captured data.

Cooper does not expressly state that the time interval during which the microcontroller is in a reduced activity mode is longer than the time interval during which the microcontroller is in a mode other than the reduced activity mode. However, depending on the application using the system of Cooper, one of ordinary skill in the art would recognize that different periods of time would be necessary to perform the analog operations and the digital operations, and the period of the reduced activity mode can be adjusted accordingly.

Further regarding claim 26, selection of the time wherein the analog circuitry processes data while the digital signal processing circuitry is in the reduced activity mode to be at least ninety percent of a time period and the time during which the digital signal processing circuitry processes the data to be no more than the remaining portion of the time period is deemed a design consideration that fails to patentably distinguish.

Regarding claim 8, it is well known in the art to use a memory to buffer between components of differing processing rates so data can be processed at the appropriate speeds.

Regarding claim 12, Cooper further discloses the use of the analog circuitry and digital circuitry on a single chip 15.

Regarding claims 13-15, it is well known to use a memory to store information so it can be retrieved at a later time. Including the memory to be part of the analog circuitry or distinct from the analog circuitry is deemed a design consideration.

Regarding claim 20, the circuitry of Cooper is configured and arranged to receive data.

10. Claims 2-5, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. in view of Narvinger et al. U.S. Patent 6,381,229.

Regarding claim 2, Cooper describes in col. 7 lines 7-12 that the analog circuitry can be shut off to reduce operating current when the analog circuitry is not needed, and that after ADC conversion, the ADC can shut itself down or wake up the processor (see abstract).

Cooper does not expressly disclose that this occurs during a known guard time.

Narvinger shows in Fig. 10, a frame structure in a communications system where a guard interval is generated during which time dummy information is transmitted, which does not have to be detected and processed by the receiver.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Cooper and Narvinger by disabling the analog portion of a receiver during a guard period where no data is transmitted to conserve power.

Regarding claim 3, Cooper further discloses the use of the analog circuitry and digital circuitry on a single chip 15. Narvinger teaches the reception of CDMA signals, which are inherently low-energy. It would have been obvious to one of ordinary skill in the art to implement the front-end analog circuitry of Narvinger on a single chip to conserve space.

Regarding claim 4, Narvinger teaches the reception of CDMA signals, which are inherently low-energy. It is well known to use a memory to store received data so the information represented by the data can be subsequently retrieved and processed at a later time.

Regarding claim 5, Cooper teaches that the analog circuitry can be shut off to reduce operating current when the digital circuitry is operating. One of ordinary skill in the art would

recognize that the analog circuitry would be inhibited from performing any operations, including accessing memory, when it is shut off.

Regarding claims 23 and 24, Cooper discloses analog circuitry (ADC 12) that captures information from analog input channels (col. 4 lines 39-41) while a microcontroller is in a reduced activity (sleep) mode, as described in col. 2 lines 33-48. Cooper further describes in col. 7 lines 7-46 that the ADC can be shut off to reduce operating current when not needed, and that after ADC conversion, the circuit can wake up the processor, thus permitting digital signal processing of the captured data.

Cooper does not expressly state that the time interval during which the microcontroller is in a reduced activity mode is longer than the time interval during which the microcontroller is in a mode other than the reduced activity mode. However, depending on the application using the system of Cooper, one of ordinary skill in the art would recognize that different periods of time would be necessary to perform the analog operations and the digital operations, and the period of the reduced activity mode can be adjusted accordingly. Further, Cooper does not expressly disclose disregarding data presented to the analog circuitry while processing data with the digital signal processing circuitry.

Narvinger shows in Fig. 10, a frame structure in a communications system where a guard interval is generated during which time dummy information is transmitted, which does not have to be detected and processed by the receiver.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Cooper and Narvinger by disregarding transmitted dummy information through disabling the analog portion of a receiver to conserve power.

11. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. in view of Nordling U.S. Patent 6,138,190.

Regarding claims 9 and 10, Cooper fails to expressly disclose that a memory circuit is provided coupled for access the analog circuitry and the digital signal processing circuitry, where the analog circuitry reads or writes data from or to memory, and the digital signal processing circuitry writes or reads data to or from memory.

Nordling discloses in Fig. 2 the use of a memory circuit 208 coupled to an analog interface 206 and a digital signal processor 204.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Nordling and Cooper so data may be exchanged between the analog and digital circuitry while power is conserved.

12. Claims 16, 17, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. in view of Berthoumieux EP Patent Document 447302 A.

Regarding claims 16, 17, 21, and 22, Cooper fails to disclose that the analog circuitry includes means for receiving low-energy, high-frequency data, and that both the analog and digital circuitry can receive and transmit data.

Berthoumieux discloses a radio communication device where the activity of the digital signal processing unit is reduced during transmission and/or reception of radio signals (see abstract), said radio signals considered low-energy, high-frequency data.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Nordling and Berthoumieux so bi-directional communication between two radio communication devices may be established.

13. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. in view of Narvinger et al. and Berthoumieux.

Regarding claim 27, Cooper discloses analog circuitry (ADC 12) that captures information from analog input channels (col. 4 lines 39-41) while a microcontroller is in a reduced activity (sleep) mode, as described in col. 2 lines 33-48. Cooper further describes in col. 7 lines 7-46 that the ADC can be shut off to reduce operating current when not needed, and that after ADC conversion, the circuit can wake up the processor, thus permitting digital signal processing of the captured data.

Cooper does not expressly disclose a timing controller for causing, during a guard period, the processing of data by the analog circuitry to be effectively disabled and the digital signal processing circuitry to process the data.

Narvinger shows in Fig. 10, a frame structure in a communications system where a guard interval is generated during which time dummy information is transmitted, which does not have to be detected and processed by the receiver.

Berthoumieux teaches a time control member 4 for controlling a speed of operation of clocks associated with the digital processing unit and the analog-digital conversion member comprising means for reducing the activity of the digital processing unit during transmission and/or reception of radio signals (see abstract).

It would have been obvious to one of ordinary skill in the art to disable the analog portion of a receiver during a guard period where no data is transmitted to conserve power.

Regarding claim 28, Cooper discloses that the reduced activity mode is implemented by disabling the clock to the microcontroller, as stated in column 2 lines 40-43.

Conclusion

14. Applicant is advised that should claim 18 be found allowable, claim 25 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Applicant is further advised that should claim 23 be found allowable, claim 24 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David B. Lugo** whose telephone number is **(703) 305-0954**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231


or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

6/26/02

David B. Lugo
Patent Examiner

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
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